REMARKS

I. Status of the Claims

Claims 1-46 are pending.

Claims 1-15, 21-38, and 42-44 are rejected. Claims 5-6 are rejected under 35 USC §112, second paragraph, as indefinite for not defining the term "stoichiometric molar ratio". Claims 1-4 and 10-15 are rejected under 35 USC §103 (a) as unpatentable over the disclosure of UK Patent GB 2 357 140 (hereinafter "Rummelhoff") in view of US Patent Application 2004/0242707 (hereinafter "DeGraaf et al."). Claims 7-9 are rejected under §103 (a) as unpatentable over the disclosure of Rummelhoff and DeGraaf et al. as applied to Claims 1-4 and 10-15 above, and further in view of U.S. Patent 6,258,860 (hereinafter "Weedon et al."). Claims 21-38 and 42-44 are rejected under §103 (a) as unpatentable over the disclosure of Rummelhoff and DeGraaf et al. as applied to Claims 1-4 and 10-15 above, and further in view of U.S. Patent 6,105,390 (hereinafter "Bingham et al.").

Claims 16-20, 39-41, 45 and 46 are objected to as dependent from a rejected base claim, but would be allowable if rewritten in independent form. Applicants acknowledge and appreciate the indication of allowability for Claims 16-20, 39-41, 45 and 46. Applicants have not rewritten these claims, however, as it is believed that Claims 1-15, 21-38 and 42-44 are also allowable over the cited art for reasons discussed hereinafter.

II. Concerning the Amendments

Claims 5-6 have been amended to clarify the ratio referenced therein. Support for the amendments appears at page 40, lines 1-12. Applicants believe the meaning of the term "stoichiometric molar ratio" is sufficiently clear from this passage in the Specification for the claimed numerical ranges. However, Applicants have made the amendment to advance prosecution.

Claims 1 and 12 are also amended to clarify that the GTL products are obtained from the conversion of natural gas as described at page 3, lines 9-22 of the Specification.

III. The Claimed Invention

The present invention is directed to more effectively integrating an LNG process and GTL process and also provides an alternative to venting of CO_2 contaminant in natural gas produced from a subterranean formation into the atmosphere in connection with production of LNG.

Therefore, in one aspect, the present invention is directed to an integrated process for producing LNG products in a LNG Phase production zone and conversion of natural gas into GTL products that include methanol in a GTL Phase production zone from a natural gas comprising hydrocarbons and CO_2. The process comprises the steps of:

pre-treating at least a first portion of the natural gas to separate at least a portion of the CO_2 therefrom and produce a natural gas feed having reduced CO_2 content and a stream rich in CO_2;

converting the natural gas feed into an LNG product in the LNG Phase;

converting a second portion of the natural gas to a synthesis gas by steam methane reformation; and

reacting the stream rich in CO_2 with at least a portion of the synthesis gas in the GTL Phase to produce methanol.

In another aspect, the invention is directed to an integrated process for producing LNG products in a LNG Phase production zone and conversion of natural gas into GTL products that include methanol in a GTL Phase production zone from a natural gas comprising hydrocarbons and CO_2. The process comprises the steps of:

pre-treating at least a first portion of the natural gas to separate at least a portion of the CO_2 therefrom and produce a natural gas feed having reduced CO_2 content and a stream rich in CO_2;

converting the natural gas feed into at least one natural gas vapor component and an LNG product in the LNG Phase;

converting the at least one natural gas vapor component, and optionally a second portion of the natural gas, to a synthesis gas by steam methane reformation; and

reacting the stream rich in CO_2 with at least a portion of the synthesis gas in the GTL Phase to produce methanol.

IV. Concerning Rejection of Claims 5-6 Under §112, 2nd Paragraph

Claims 5-6 stand rejected under 35 U.S.C. 112, as indefinite for not defining the ratio for the ranges of the stoichiometric molar ratio specified therein. Applicants disagree and believe the term "stoichiometric molar ratio" used in the original claim text is definite in view of the use of this term as set forth at page 40 of the Specification. However, Applicants have made amendments to advance prosecution of this Application.

The Office Action, on page 2 below the rejection of Claims 5-6 mentioned above, contains comments directed to the term "GTL" and also "optionally". It is not clear to Applicants, on the basis of the language set forth on page 2 of the Office Action, whether a claim is rejected under §112, or whether the comments concerning these terms are suggestions. Applicants have made an amendment to Claims 1 and 12 which is believed to clarify the term "GTL products" as used in the claims and Specification. Applicants note that the term "optionally" is a generally accepted claim term within the Office and therefore believe use of the term is proper. Applicants appreciate the Office's suggestions.

Accordingly, withdrawal of rejections under 35 U.S.C. §112 and reconsideration of the claims pending herein is respectfully requested.

V. Concerning Rejection of Claims 1-4 and 10-15 Under §103 (a)

Claims 1-4 and 10-15 stand rejected under 35 U.S.C. 103(a) as unpatentable over Rummelhoff in view of DeGraaf et al. The Office takes the position that Rummelhoff discloses Applicants' inventive concept, an integrated process for producing LNG and methanol by reforming of natural gas, "with the exception of using a carbon dioxide stream removed from the feed in the reformer". (Emphasis added). Applicants believe the Office has misunderstood Applicants' claimed invention, in that both independent claims (Claims 1 and 12) in the pending claims require separation of CO_2 (as a contaminant) present in the natural gas feed to the integrated process, and later react the CO_2 with synthesis gas to produce methanol. These claims do not state that the recovered CO_2 is reacted in a reformer; rather they are reacted with synthesis gas to produce methanol under conditions suitable to produce methanol. See also the Specification at page 39, line 19 to page 40, line 12. The cited art does not teach or suggest removal of CO_2 contaminant from natural gas feed, much less that the recovered CO_2 may be later reacted with synthesis gas to produce

methanol. Accordingly, Applicants respectfully traverse the rejection and reconsideration is respectfully requested.

Rummelhoff discloses a LNG process for liquefying natural gas, which process also diverts a methane-rich flash gas from LNG production and directs such flash gas to production of methanol in a methanol plant integrated with the LNG process. It is said in connection with Fig. 3 that a natural gas feed 11 to this integrated process is first directed to a gas sweetening and dehydration unit 100 wherein CO_2 and H_2S is removed by use of an amine process (see page 4, lines 13-19), and presumably exits the integrated process via line 2, but there is no reference to line 2 in the patent specification. At any rate, there is no disclosure by Rummelhoff regarding use of this CO_2 after its removal, either in the disclosed integrated process or otherwise.

Thus, it is fair to surmise that such CO_2 removed in unit 100 is simply vented by Rummelhoff into the atmosphere as done in the prior art. See e.g., page 6, lines 18-23 of the present Specification in this Application.

De Graaf concerns a reforming process for producing synthesis gas which is said to be integrated with a hydrocarbon synthesis (Fischer-Tropsch) process. There is no discussion of the production of LNG or integration of a process to produce GTL products therewith, including methanol. De Graaf discloses that carbon dioxide generated by the reforming and Fischer-Tropsch process is recycled to the reforming process. See, e.g., Paragraphs 004, 007, 0011 (particularly the last seven lines thereof). In connection with Fig. 1, it is clear that the CO_2 generated in the disclosed process is recycled to the reformer. At any rate, there is clearly no disclosure of the separation of CO_2 in a natural gas feed, followed by reaction of the separated CO_2 with synthesis gas to produce methanol under conditions sufficient to produce methanol. As a result, Applicant disagrees with the statement in the Office Action on page 3, lines 5-7 thereof to the effect that De Graaf shows that using carbon dioxide from the natural gas feed in a reformer is old in the art. De Graaf does not disclose removal of carbon dioxide in a natural gas feed for use in a reformer, nor does it disclose reaction of such CO_2 with synthesis gas to produce methanol.

Accordingly, Applicants respectfully traverse this rejection and reconsideration is respectfully requested.

VI. Concerning Rejection of Claims 7-9 Under §103 (a)

Claims 7-9 stand rejected under 35 U.S.C. 103(a) as unpatentable over Rummelhoff in view of DeGraaf et al., as applied to Claims 1-4 and 10-15 set forth above, and further in view of Weedon et al. Weedon et al. concerns a process for production of methanol. It does not discuss the production of LNG, nor does it disclose or suggest that CO_2 present in natural gas as a contaminant could be recovered and later used in production of methanol. Specifically, Weedon et al. is applied to show that the conditions to produce methanol, as specified in Claims 7-9, would be obvious.

Applicants have discussed the Rummelhoff and DeGraaf et al. references above in connection with the rejection of Claims 1-4 and 10-15, and it is clear that this art does not teach or suggest removal of CO_2 contaminant from natural gas feed and reaction of the recovered CO_2 with synthesis gas to produce methanol. Claims 7-9 are dependent directly or indirectly from Claim 1 and thus, include the limitations of Claim 1. Weedon et al. adds nothing to support the rejection of Claim 1.

Accordingly, Applicants respectfully traverse this rejection and reconsideration is respectfully requested.

VII. Concerning Rejection of Claims 21-38 and 42-44 Under §103 (a)

Claims 21-38 and 42-44 stand rejected under 35 U.S.C. 103(a) as unpatentable over Rummelhoff in view of DeGraaf et al., as applied to Claims 1-4 and 10-15 as set forth above, and further in view of Bingham et al. The Office takes the position that Rummelhoff discloses Applicants' inventive concept, an integrated LNG/methanol plant "with carbon dioxide recycling in the process" substantially as claimed, with the exception of liquefying natural gas by a series of expansion valves and separation of expanded gas. Bingham et al. is cited to show that use of a series of separations and expansions with J-T valves is known in the gas liquefaction art. However, Bingham et al. does not disclose or suggest removal of CO_2 from a natural gas stream prior to liquefaction for later use in another process. Bingham et al. does not disclose or suggest use of natural gas or another mixed gas composition for production of products other than separation of the gases in the mixture or to produce LNG. Specifically, nothing is disclosed relative to conversion of such gases by reaction to produce other products, such as methanol.

Applicants have discussed the Rummelhoff and DeGraaf et al. references above in connection with the rejection of Claims 1-4 and 10-15, and it is clear that this art does not teach or suggest removal of CO_2 contaminant from natural gas feed and reaction of the recovered CO_2 with synthesis gas to produce methanol. Applicant also disagrees with the Office relative to the statement on page 4, bottom of the page, which is placed in quotes in the above paragraph regarding an asserted disclosure by Rummelhoff of the recycle of CO_2. There is no teaching by Rummelhoff of recovering CO_2 and recycling it to any step of the Rummelhoff process.

Claims 21-38 and 42-44 are dependent directly or indirectly from Claim 12, and thus, include the limitations of Claim 12. Bingham et al. adds nothing to support the rejection of Claim 1. Accordingly, Applicants respectfully traverse this rejection and reconsideration is respectfully requested.

VIII. Concluding Remarks

Relative to the first paragraph on page 3 of the Office Action concerning joint inventorship, the subject matter claimed herein was commonly owned by the assignee of record at the time the invention was made. Applicants appreciate the Office's reminder regarding the obligation to disclose inventors and invention dates for claimed subject matter that was not commonly owned at the time a later invention was made.

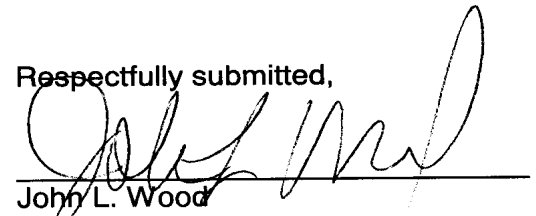
Applicants have resubmitted concurrently herewith a copy of the excerpt from the Kirk-Othmer encyclopedia submitted with the original Information Disclosure Statement mailed December 22, 2004, as well as another copy of such Information Disclosure Statement for the Examiner's convenience.

Applicants have reviewed the art made of record, but not relied upon in the Office Action. Applicants do not believe the art is relevant to patentability of the pending claims herein.

In view of the foregoing Amendments and Remarks, Applicants respectfully request that the rejections of Applicant's Claims 1-15, 21-38, and 42-44 as set forth in the Office Action be withdrawn and that such claims be reconsidered with Claims 16-20, 39-41, 45 and 46 previously indicated as directed to allowable subject matter. Applicants submit that all

pending claims herein are in condition for allowance and such is respectfully solicited at an early date.

Respectfully submitted,



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